King County Government

Greenhouse Gas & Traditional Pollutant Emissions Inventory

BACKGROUND: CLIMATE CHANGE & AIR POLLUTION

Year 2000

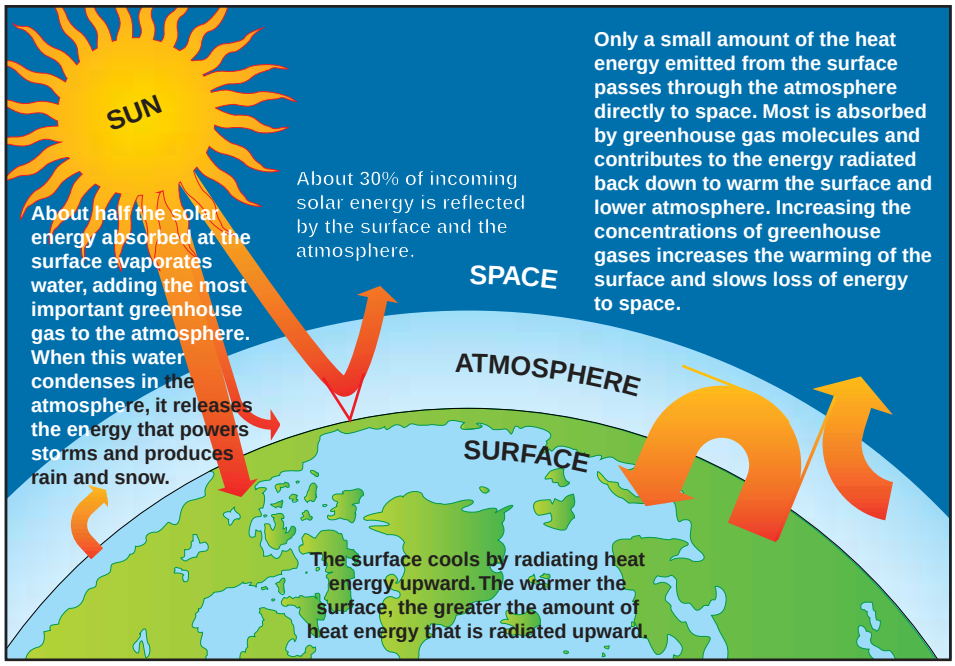
Introduction

The global climate has warmed and cooled throughout Earth's history - fluctuating naturally over periods of thousands of years, thereby enabling human and natural communities to adapt slowly over time. In recent decades, however, evidence shows that the climate is being altered by increased human-caused emissions of heat-trapping, or "greenhouse" gases. Eight of the ten warmest years on record have occurred since 1990, with 1998 topping the list. Other evidence of global temperature increases since the 19th century includes the shrinkage of glaciers, reduced snow cover, and a global average sea level rise of 4 - 10 inches.

There is significant concern that human activities, such as burning fossil-fuels for our energy and transportation needs, waste disposal, and unsustainable forestry practices are accelerating the pace of climate change at a rate which natural and manmade systems may not be able to accommodate.

Source for figures on this page: US National Assessment of the Potential Consequences of Climate Variability and Change. National Assessment Synthesis Team, US Global Change Research Program, 2000.

THE EARTH'S GREENHOUSE EFFECT

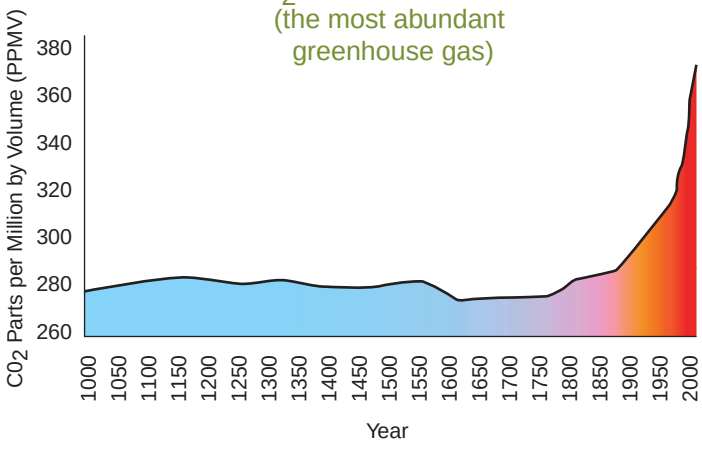


The Climate Predictions: What's Ahead?

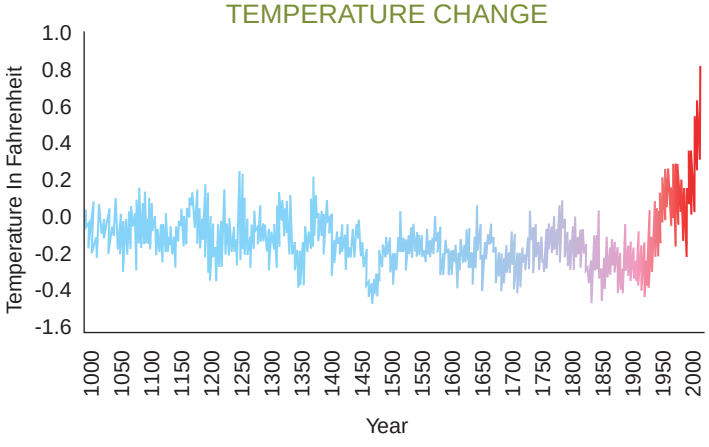
The United Nation's Intergovernmental Panel on Climate Change (IPCC) uses sophisticated climate models to estimate the relative change in temperatures over time. The models produce scenarios which range from 1.8 to 10.8 degrees Fahrenheit warmer over the whole planet by 2100. For comparison, consider that the world is only 9 to 16 degrees warmer now than during the depths of the last ice age.

Scientists acknowledge that there is uncertainty in climate models; they debate whether climate change will happen more quickly or less quickly, and how it will impact different parts of the world. In short, there are limitations in predicting the future. The legitimate scientific community does not argue, however, about whether changes are happening.

CO_2 CONCENTRATIONS (the most abundant greenhouse gas)



NORTHERN HEMISPHERE TEMPERATURE CHANGE



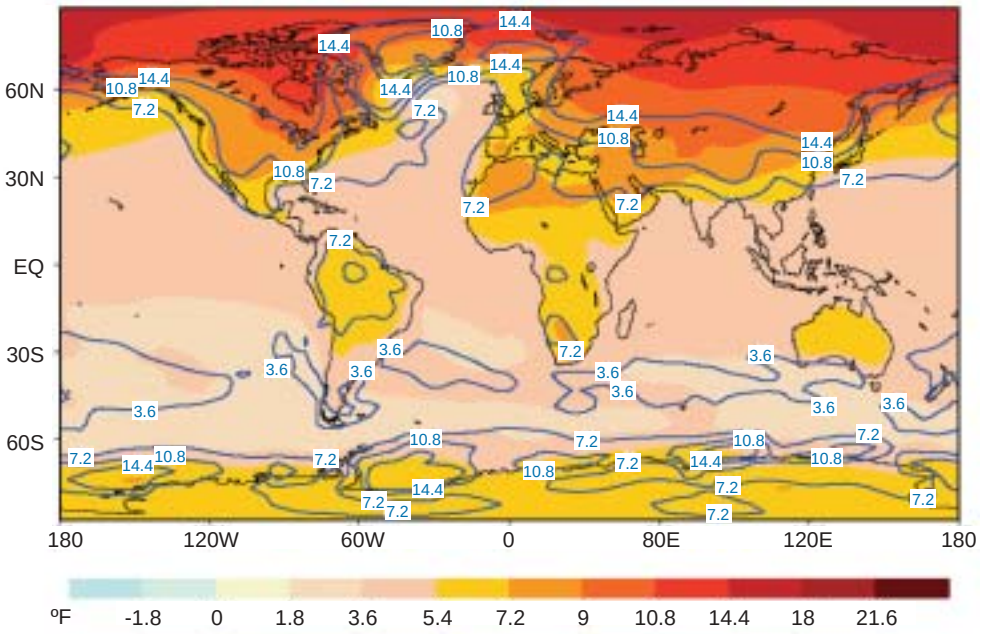
LOCAL IMPACTS: WHAT DOES THIS MEAN TO THE NORTHWEST REGION? TO KING COUNTY?

Global warming is often thought of as an abstract concept that occurs only at a macro level. In fact, the impacts of climate change are felt locally and will have a profound effect on life in the Pacific Northwest. The Climate Impacts Group at the University of Washington, with some of the foremost researchers on the subject, predicts:

- reduced snowpack during winter - some models predict as much as 50% decrease in Cascade Mountain snowpack within the next 50 - 80 years
- decrease in summer streamflow (due to reduced snowpack in the mountains) translates into less reliable water supplies for hydropower, irrigation and salmon runs
- more flooding during winter due to warmer temperatures and faster snowmelt
- diminished local air quality
- sea level rise due to glacial melting and rising ocean temperatures
- altered plant, animal, and insect distributions with potentially large impacts on agriculture, forestry, natural resources, and human health.

King County, as one of the largest public service providers in the Pacific Northwest, is necessarily affected by these dramatic changes. King County activities such as building construction, land-use planning, public health care, flood control, stormwater management, and fisheries conservation will have to consider potential climate change impacts.

ANNUAL AVERAGE TEMPERATURE CHANGE OVER 100 YEARS (LATE 20TH TO LATE 21ST CENTURY)



Source: Climate Change 2001: The Scientific Basis. Intergovernmental Panel on Climate Change Third Assessment Report

How Does Climate Change Relate to Local Air Pollution?

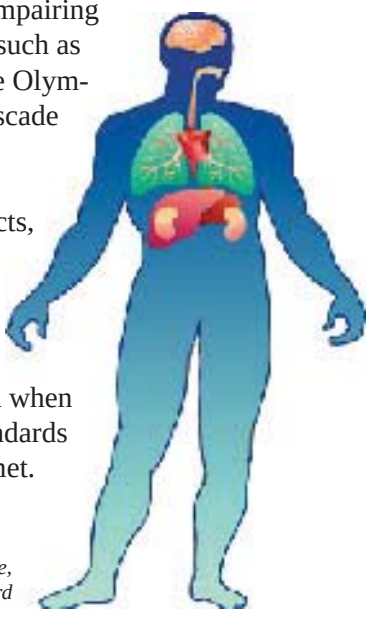
Traditional air pollutants have at least three important relationships to greenhouse gases that cause climate change:

- Many of the same human activities that produce greenhouse gases are also sources of health-related air pollutants regulated by the Clean Air Act.
- Higher summer temperatures resulting from climate change increase ground-level ozone, the major component of smog.
- Certain traditional pollutants modify or enhance the effective warming potential of greenhouse gases through chemical and physical interactions with greenhouse gases

AIR POLLUTION AND HUMAN HEALTH

Every day you breathe in thousands of gallons of air. With that much air going into your lungs, even small amounts of air pollution present in each breath of air can harm your health. These traditional air pollutants are associated with decreased respiratory function - especially for children, the elderly and people with asthma.

Traditional pollutants also decrease visibility, impairing city views such as those of the Olympic and Cascade Mountains. Because of these impacts, traditional pollutants are a concern today, even when federal standards are being met.



Source: The Know Zone, California Air Resources Board

King County
Department of Natural Resources and Parks

Produced by the Visual Communications & Web Unit
File name: 0206 Air Emissions Insert.p65